**Enzyme Lab**

**INTRODUCTION**

An enzyme is a protein that speeds up or slows down a specific chemical reaction in an organism. A good rule of thumb is to remember that enzyme names end in “-ase”. This will help in identifying enzymes in further readings. Generally enzymes are catalysts.

Hydrogen peroxide is a toxic chemical that is produced in many organisms during metabolism. Organisms must get rid of this toxin to survive. One reaction turns the hydrogen peroxide into water and oxygen. The enzyme that helps with this reaction is called catalase. This is found in both plants and animals. In this lab we will use potatoes as our catalase source. The reaction equation is:

Catalase

2H2O2 🡪 2H2O + O2

The purpose of this lab will be to:

1. Observe the breakdown of hydrogen peroxide toxin by potato’s enzyme catalase.
2. Determine factors that influence how quickly the reaction takes place.
3. Determine factors that influence how well enzymes function.
4. Use graphic analysis (graphing) to analyze our results.

**SCIENTIFIC** **QUESTION**: How does pH/salinity/temperature effect the optimal function of the enzyme catalase?

**HYPOTHESIS**: Formulate a hypothesis for this experiment. You will select 1 dependent variable from 3 different options and each viable with have 3 experimental groups.

*If the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (independent variable) is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (state how IV was changed), then the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (dependent variable) will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

**MATERIALS**:

* 4 test tubes
* Test tube rack
* Graduated cylinder
* Hydrogen peroxide (H2O2)
* Timer
* Experimental Groups:

pH

Acid

Base

Neutral

Salinity

Water (0 g/L)

Blood (9g/L)

Ocean (35g/L)

Temperature

Hypothermia (34**°C**)

Body temperature (**37°C**)

Fever (42 **°C**)

**PROCEDURE**

1. Determine which variable you will test and how you will use each experimental group.
2. **Write your procedure in your notebook**
3. Gather all materials
4. Label test tubes
5. Fill each test tube with 5mL hydrogen peroxide
6. Obtain about 6 piece of liver (2 trials)
7. Complete your procedure for each experimental group. Remember to run 2 trials.
8. Record your observations and time of reaction in the data table.

**DATA:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test tube | Observations | Time for reaction | | Average Time for Reaction |
|  |  | 1st trail | 2nd trail |  |
| 1. Sand   (Control group) |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**DATA ANALYSIS:**

Graph your data and include a title and axis label.

**CONCLUSION:**

Write a conclusion for this lab based on your data. Include a claim, evidence, and reasoning.